

What is claimed is:

1. An apparatus for shaping a plurality of conductor members disposed circumferentially and extending axially from a rotary-electric-machine stator comprising:

first means for holding said conductor members;

second means for moving said first means in the circumferential direction of said stator; and

a third means for moving said first means in the axial direction of said stator.

2. The apparatus as claimed in claim 1, wherein said first means comprises a first pair of twister cylinders coaxially disposed with each other.

3. The apparatus as claimed in claim 2, wherein each of said first pair of twister cylinders rotates in a direction opposite to each other.

4. The apparatus as claimed in claim 2, wherein each of said first pair of twister cylinders has a plurality of holes disposed circumferentially at equal intervals, and said plurality of holes of one of said twister cylinder is radially spaced apart from said plurality of holes of the other at a first distance.

5. The apparatus as claimed in claim 4, wherein

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said first means further comprises a second pair of twister cylinders coaxially disposed adjacent to said first pair of twister cylinders at a second distance, and each of said second pair of twister cylinders has a plurality of holes disposed circumferentially at equal intervals, said plurality of holes of one of said twister cylinder are radially spaced apart from said plurality of holes of the other at a third distance, and said second distance is longer than said first and third distance.

6. The apparatus as claimed in claim 1 further comprising a controller for simultaneously controlling said second and third means.

7. The apparatus as claimed in claim 6, wherein said controller controls said second means to rotate one of said first pair of twister cylinders in a direction opposite to the other.

8. An apparatus for shaping coil ends composed of a plurality of sets of U-shaped large and small conductor segments disposed in four radial-layers of slots of a rotary-machine-stator, said apparatus comprising:

four of twister cylinders, respectively rotatable about an axis, for holding connection ends of said large and small conductor segments in said four radial layers at an axial end of said stator;

a rotating mechanism for rotating said twister cylinders alternately in opposite directions to bend connection ends of said large and small conductor segments in one of said circumferential layers in one direction and connection ends of said large and small conductor segments in adjacent circumferential layer in the opposite direction;

an elevating mechanism for moving said twister cylinders in the axial direction of said stator; and

a controller for controlling said rotating mechanism and elevating mechanism to move said twister cylinders so that the length of said conductor members extending from said stator can be maintained constant.

9. The apparatus as claimed in claim 8, wherein each of said twister cylinders has a plurality of holes disposed circumferentially at equal intervals.

10. The apparatus as claimed in claim 9, wherein said four twister cylinders are divided to an outer pair of cylinders and inner pair of cylinders to position each pair of said large and small conductor members in outer two of said circumferential layers and each pair of said large and small conductor members in inner two of said circumferential layers side by side respectively.

11. An apparatus for shaping coil ends composed of a plurality of conductor segments disposed in a plurality of

radial-layers of slots of a rotary-machine-stator, said apparatus comprising:

a plurality of twister cylinders respectively corresponding to said radial layers of slots and rotatable about an axis, said twister cylinders respectively holding connection ends of said conductor segments in separate circumferential layers at an axial end of said stator;

a rotating mechanism for rotating said twister cylinders alternately in opposite directions to bend connection ends of said conductor segments in one of said circumferential layers in one direction and connection ends of said conductor segments in adjacent circumferential layer in the opposite direction;

an elevating mechanism for moving said twister cylinders in the axial direction of said stator; and

a controller for controlling said rotating mechanism and elevating mechanism to move said twister cylinders so that the length of said conductor members extending from said stator can be maintained constant.

12. A method for manufacturing a rotary-electric-machine-stator having a cylindrical stator core with a plurality of slots, said method comprising the steps of:

inserting a plurality of conductor members into said slots in a plurality of radial layers;

holding each end of said conductor members extending from said slots so that ones extending from one layer of said

plurality of slots are radially spaced apart from others extending from the layer adjacent said one layer;

circumferentially and radially moving each end of said conductor members; and

welding each end of said conductor member.

13. A method for manufacturing a rotary-electric-machine-stator having a cylindrical stator core with a plurality of slots, said method comprising the steps of:

inserting a plurality of a set of U-shaped large and small conductor segments into said slots in four radial layers;

holding each end of said conductor segments extending from said slots in four circumferential layers radially spaced apart from one another;

circumferentially and radially moving each end of said conductor segments so that the length of said conductor segments extending from said stator can be maintained constant to position each pair of ends of said large and small conductor segments in outer two of said circumferential layers side by side and each pair of ends of said large and small conductor segments in inner two of said circumferential layers side by side; and

welding each end of said conductor members positioned side by side.